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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,483	02/26/2004	Akira Kikuchi	07403.0004-00	7014

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EXAMINER	
GUADALUPE, YARITZA	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/787,483	Applicant(s) KIKUCHI ET AL.	
	Examiner Yaritza Guadalupe McCall	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-12* is/are allowed.

6)☒ Claim(s) *13-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

In response to Amendment filed June 23, 2005

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 13 – 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 13, the method for controlling measurement by a multi-joint coordinate measuring system comprising the step of detecting a parameter concerning a posture of the measuring arm exceeding a prescribed value, the prescribed value having been determined in accordance with a first probability that a measurement error due to a user action pulling the measuring arm away from the support member becomes out of an allowable range is considered indefinite since it is not clear from the claimed language how to obtain the prescribed value. The claimed limitations fail to provide the required steps needed in order to achieve the step of obtaining said prescribed value. The claim language only states that the prescribed value is determined in accordance to a first probability, however, the first probability has not been

defined in order to accurately obtain this value so that the method steps are fully met. Appropriate correction is required.

Similarly, with respect to claim 17, the claims also recite the method of controlling measurement by a multi-joint coordinate measuring system comprising the step of detecting a parameter concerning a posture of the measuring arm exceeding a prescribed value, the prescribed value having been determined in accordance with a first probability that a measurement error due to a user action moving the measuring arm with a change in the force applied to the measuring arm by the counter balance becomes out of an allowable range. As stated above, the claimed limitations fail to provide the required steps needed in order to achieve the step of obtaining said prescribed value. The claim language only states that the prescribed value is determined in accordance to a first probability, however, the first probability has not been further defined in order to accurately obtain this value so that the method steps are fully met. Appropriate correction is required.

In regards to claims 24 and 25, the claims refer to a multi-joint coordinate measuring system comprising a processor configured to detect a parameter concerning a posture of the measuring arm exceeding a prescribed value, the prescribed value having been determined in accordance with a probability that a measurement error due to a user action pulling the measuring arm away from the support member becomes out of an allowable range. This limitation is indefinite since it is not clear how a parameter is detected based on the prescribed

value, which is obtained from a probability without further defining these terms. It seems like the "parameter", "the prescribed value" and the "probability" are mathematical manipulations based on operational data, however, the relationship between them has not been clearly established in order to correlate the data to accurately obtain each of these values. Appropriate correction is required.

Claims 14 – 16, 18 – 19, 26 – 27 and 29 are rejected due to their dependency on claims 13 and 17.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 13 - 29 are rejected under 35 U.S.C. 102 (b) as being anticipated by Raab (US 6,606,539).

In regards to the method step of claim 13, the system disclosed by Raab could perform the method of controlling measurement by a multi-joint coordinate measuring system, the system including a support member (22), a multi-joint measuring arm (10) having a first end attached

to the support member (22) and a second end, a probe installed at the second end of the measuring arm, and a processor (16, 18) capable of producing a three-dimensional coordinate corresponding to a position of the probe based on an angle of each joint of the measuring arm (See Column 5, lines 41 – 45), the method comprising the steps of detecting a parameter, i.e., rotational endstop (106), concerning a posture of the measuring arm exceeding a prescribed value, the prescribed value having been determined in accordance with a first probability that a measurement error due to a user action pulling the measuring arm away from the support member becomes out of an allowable range, and warning a user in accordance with a result of the detecting (See Column 8, lines 54 – 60).

Regarding claim 14, Raab's system teaches a system wherein a first parameter concerning an angle between links of the measuring arm, such as the positions of the transducers located at the joints, and a second parameter concerning a distance of the measuring arm's reach are used in the detecting, and the warning is performed when at least one of the first and second parameters exceeds a corresponding prescribed value.

With respect to claim 15, Raab also shows a system further capable of controlling the processor not to output the three-dimensional coordinate in accordance with a result of the detecting step.

Regarding claim 16, Raab discloses a system which will allow for additionally detecting the parameter concerning the posture of the measuring arm exceeding a limit value, the limit value corresponding to a second probability concerning the measurement error larger than the first probability, and controlling the processor not to output the three-dimensional coordinate in accordance with a result of the additional detecting.

With respect to claim 17, Raab discloses a multi-joint measuring system including a support member (22), a multi-joint measuring arm (10) having a first end attached to the support member and a second end, said system including a probe a probe installed at the second end (54, 56) of the measuring arm, a processor (16, 18) capable of producing a three-dimensional coordinate corresponding to a position of the probe based on an angle of each joint of the measuring arm (See Column 5, lines 41 – 45), and a counter balance (60) configured to generate a force raising the measuring arm against gravity, the system allowing the steps of detecting a parameter, , i.e., rotational endstop (106), concerning a posture of the measuring arm exceeding a prescribed value (See Column 8, lines 54 – 60), the prescribed value having been determined in accordance with a first probability that a measurement error due to a user action moving the measuring arm with a change in the force applied to the measuring arm by the counter balance becomes out of an allowable range; and warning a user in accordance with a result of the detecting (See Column 9, lines 1 – 8).

Regarding to claim 18, Raab teaches system further capable of controlling the processor not to output the three-dimensional coordinate in accordance with a result of the detecting (See Column 3, lines 1 – 16 and 35 – 52).

In regards to claim 19, Raab discloses a system which will allow for additionally detecting the parameter concerning the posture of the measuring arm exceeding a limit value, the limit value corresponding to a second probability concerning the measurement error larger than the first probability, and controlling the processor not to output the three-dimensional coordinate in accordance with a result of the additional detecting.

With regards to claim 20, Raab teaches a multi-joint coordinate measuring system comprising a support member (22), a multi-joint measuring arm (10) having a first end (56) for installation of a probe and a second end (14) for attachment to the support member (22), the arm including a head member (54, 56) for holding the probe; a first link (50) ; a second link (44); a wrist joint (57, 58) for providing a bending motion between the head member (56) and the first link (50); an elbow joint (46) for providing a bending motion between the first link (50) and the second link (44); and a shoulder joint (60) for providing a bending motion between the second link (44) and the support member (22), a counter balance (60), provided in association with the shoulder joint, for generating a force raising the second link on a side of the elbow joint against gravity, and a processor (16, 18) configured to input an angle of each joint of the measuring arm into a formula, since it is understood that the processor will perform the calculations based on mathematical manipulations, to produce a three-dimensional coordinate

corresponding to a position of the probe, the formula including a term for correcting an error due to a change of the force generated by the counter balance (See Column , lines 1 – 8).

Regarding claim 21, Raab also teaches a system wherein the formula includes, in association with the term, a parameter representing a deflection of the second link due to the force generated by the counter balance, the parameter being determined based on an angle of the shoulder joint.

In regards to claim 22, Raab further discloses a system wherein the measuring arm further includes a first joint (57 , 58) for providing a twisting motion between the head member (54, 56) and the first link (50); a second joint (46) for providing a twisting motion between the first link (50) and the second link (44); and a third joint (60) for providing a twisting motion between the second link (44) and the support member (22).

With respect to claim 23, the system shown by Raab including a three-dimensional coordinate by a multi-joint coordinate measuring system, the system including a support member (22), a multi-joint measuring arm (10) having a first end attached to the support member (22) and a second end, a probe installed at the second end of the measuring arm, and a counter balance (60) configured to generate a force raising the measuring arm against gravity, could allow to perform the method comprising the step of inputting a plurality of joint angle data from the measuring arm; calculating from the input data a three-dimensional coordinate corresponding

to a position of the probe, by a formula including a term for correcting an error due to a change of the force generated by the counter balance, and outputting the three-dimensional coordinate.

With respect to claim 24, Raab discloses a multi-joint coordinate measuring system comprising a support member (22), a multi-joint measuring arm (10) having a first end attached to the support member, a second end (54, 56) at which a probe can be installed, and a plurality of joints (57, 58, 46, 60), a processor (16, 18) configured to produce a three-dimensional coordinate corresponding to a position of the probe based on an angle of each joint of the measuring arm, and to detect a parameter, i.e., rotational endstop (106), concerning a posture of the measuring arm exceeding a prescribed value (See Column 8, lines 54 – 60), the prescribed value having been determined in accordance with a probability that a measurement error due to a user action pulling the measuring arm away from the support member becomes out of an allowable range; and a warning indicator (20) configured to warn a user in accordance with a result of the detection by the processor.

Regarding to claim 25, Raab teaches a multi-joint coordinate measuring system comprising a support member (22), a multi-joint measuring arm (10) having a first end attached to the support member (22), a second end (54, 56) at which a probe can be installed, and a plurality of joints (57, 58, 46, 60), a counter balance (60) configured to generate a force raising the measuring arm against gravity, a processor (16, 18) configured to produce a three-dimensional coordinate corresponding to a position of the probe based on an angle of each joint of the measuring arm, and to detect a parameter, i.e., rotational endstop (106), concerning a

posture of the measuring arm exceeding a prescribed value (See Column 8, lines 54 – 60), the prescribed value having been determined in accordance with a probability that a measurement error due to a user action moving the measuring arm with a change in the force applied to the measuring arm by the counter balance becomes out of an allowable range; and a warning indicator (20) configured to warn a user in accordance with a result of the detection by the processor.

In regards to claim 26, the method wherein the parameter concerning the posture of the measuring arm includes a parameter, i.e., rotational endstop (106), concerning an angle between links of the measuring arm, will be met during the regular operation of the system disclosed by Raab (See Column 8, lines 54 – 60).

Regarding claim 27, the method wherein the parameter concerning the posture of the measuring arm includes a parameter, i.e., rotational endstop (106), concerning a distance of the measuring arm's reach (See Column 8, lines 54 – 60).

With respect to claim 28, Raab discloses a multi-joint coordinate measuring system comprising a support member (22); a multi-joint measuring arm (10) having a first end (14) attached to the support member, a second end (56) at which a probe can be installed (See Column 6, line 11), and a plurality of joints (wrist joint 57 and 58, elbow joint 46, shoulder joint 60), a processor (16, 18) configured to produce a three-dimensional coordinate corresponding to a position of the probe based on an angle of each joint of the measuring arm; and a warning

indicator (20) that warns a user in response to a detection of a condition that a parameter, i.e., rotational endstop (106), concerning a distance of the measuring arm's reach exceeds a prescribed value (See Column 8, lines 54 – 60).

In regards to claim 29, the method wherein the parameter concerning the posture of the measuring arm includes a parameter, i.e., rotational endstop (106), concerning an angle of a joint of the measuring arm (See Column 8, lines 54 – 60).

Allowable Subject Matter

5. Claims 1 – 12 are allowed.

Response to Arguments

6. Applicant's arguments, see pages 14 - 21, filed June 23, 2005, with respect to claims 1 - 12 have been fully considered and are persuasive. The rejection of the claims has been withdrawn.

7. Applicant's arguments with respect to claims 13 - 25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yaritza Guadalupe whose telephone number is (571)272 -2244. The examiner can normally be reached on 9:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YGM
August 11, 2005

Yaritza Guadalupe-McCall
Patent Examiner
Art Unit 2859